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10/712,842

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SUITE 204  
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EXAMINER

WANG, TED M

ART UNIT

PAPER NUMBER

2611

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
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3 MONTHS

03/23/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/712,842

Applicant(s)

YU ET AL.

Examiner

Ted M. Wang

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 12 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-5 and 9-11 is/are rejected.
- 7) ☒ Claim(s) 2,6-8 and 12-19 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 4, 5 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to define the meaning of a specific term.

- Claim 4, line 2, the limitation of "down sampling the recovered components data from Ts/M to Ts/N" is indefinite since "M" and "N" have not been defined in the claim.
- Claim 5, the limitation "fast equalizer" in line 2 as recited is indefinite since it has not been defined either in the claims or in the specification.
- Claim 11, lines 2-3, the limitation of "down sampling the recovered components data from Ts/M to Ts/N" is indefinite since "M" and "N" have not been defined in the claim.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 1, 3-5, 10 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Mutsuoka et al. (US 5,809,009).

- With regard claim 1, Mutsuoka et al. discloses a method of recovering symbol synchronization for a serial transmission, the method comprising the steps of:

- obtaining in-phase and quadrature components of a received digital bitstream (Fig.10 element 11), the components including a pilot bitstream embedded therein (column 18 lines 56-60);

- storing a copy of the obtained in-phase and quadrature components (Fig.10 element 35, where the quadrature baseband signal is stored and then extracted by element 35);

- recovering a version of the pilot bitstream from the obtained components (Fig.10 element 31a and 31b and column 17 lines 24-40);

- computing a correlator output to provide a timing correction factor (Fig.10 element 32a, 32b, 36, 37, 26, and 39, where the timing correct factor is at element 39 output, timing control signal);

- applying the timing correction factor (Fig.10 element 39 output, timing control signal) to the stored copy of the received components to adjust the symbol timing of the received bitstream (Fig.10 element 38, where the timing signal is sent to adaptive equalizer to adjust the stored copy of the received bitstream); and

- recovering another version of the pilot bitstream from the copy of the received bitstreams based on the adjusted symbol timing (Since the pilot can be

extracted by 31b and 32b, it is inherent that the another version of the pilot bitstream is recovered from the previous timing control signal at first. Note that the pilot bitstream or the correlation signal 41 is generated before the next timing control signal takes effect.)

- With regard claim 3, Mutsuoka et al. further discloses wherein the step of computing a correlator output includes processing the data through an equalizer (Fig.10 element 38) which is trained by the output of the correlator (Fig.10 element 39 output, timing control signals) to assist in the detection of the pilot signal and recover the timing.
- With regard claim 4, Mutsuoka et al. further discloses wherein the step of recovering includes down sampling the recovered components data from  $T_s/M$  to  $T_s/N$  (Fig.10 element 35, where M and N could be any numbers and/or same numbers).
- With regard claim 5, Mutsuoka et al. further discloses wherein the step of recovering further includes processing the recovered components data through a fast equalizer (Fig.10 element 38) and providing the correlator output as feedback (Fig.10 elements 32b, 37, 26 and 39, where the feedback signal is considered as the timing control signals from timing generating section, 39, output) to the fast equalizer (Fig.10 element 38).
- With regard claim 10, which is a system claim related to claim 1, all limitation is contained in claim 1. The explanation of all the limitation is already addressed in the above paragraph.

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- With regard claim 11, which is a system claim related to claim 4, all limitation is contained in claim 4. The explanation of all the limitation is already addressed in the above paragraph.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mutsuoka et al. (US 5,809,009) in view of Shirakata et al. (US 6,618,352).

- With regard claim 9, Mutsuoka et al. discloses all of the subject matter as described in the above paragraph except for specifically teaching wherein the pilot bitstream is transmitted using Differential Phase Shift Keying and sync and data fields of the digital bit stream are transmitted using Quadrature Amplitude Modulation.

However, Shirakata et al. teaches wherein the pilot bitstream is transmitted using Differential Phase Shift Keying (column 14 lines 11-47) and sync and data fields of the digital bit stream are transmitted using Quadrature Amplitude Modulation (column 18 lines 40-46) in order to perform the modulation and demodulation efficiently even with a burst-like OFDM signal constructed so

that masses of data intermittently appear, thus improving the transmission efficiency when the OFDM signal is transmitted in a burst manner (column 14 lines 48-56). Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the method as taught by Shirakata et al. into Mutsuoka's system in which transmitting pilot bitstream using Differential Phase Shift Keying and transmitting sync and data fields of the digital bit stream using QAM so as to improve the transmission efficiency when the OFDM signal is transmitted in a burst manner.

***Allowable Subject Matter***

7. Claims 2, 6-8 and 12-19 are objected to as being dependent upon an objected claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

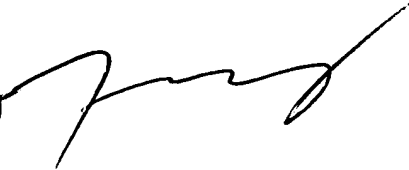
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted M. Wang

A handwritten signature in black ink, appearing to read 'Ted M. Wang', with a stylized, flowing script.

Ted M Wang  
Examiner  
Art Unit 2611